

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Oakland**

Site Summary Level: **Lawrence Livermore National Laboratory**

Project **OK-021 / LLNL Base Program**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0462**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose

The Base Program Project Baseline Summary (PBS) describes activities necessary to manage and implement ongoing and planned waste operations conducted by the Environmental Protection Department (EPD) Hazardous Waste Management (HWM) Division at LLNL to ensure hazardous, radioactive and mixed wastes are stored, treated, certified, and disposed of in compliance with Federal, State, and local regulations; DOE Orders; and LLNL policies and procedures in an efficient and cost-effective risk management manner, incorporating stakeholder involvement. In its activities, HWM will assist LLNL programs to minimize waste and prevent pollution. The activities described in this PBS formulate a centralized waste management program at LLNL to ensure waste handling practices from the generating source through final disposition are consistent to ensure safe, compliant, and cost-effective operations at the treatment, storage, and disposal facilities (TSDFs); thereby, reducing human and environmental risks, and decreasing DOE and LLNL liability. Waste types managed by this PBS include low-level waste (LLW), mixed low-level waste (MLLW), combined low-level waste (CLLW, a mixture of non-RCRA hazardous with LLW), transuranic (TRU) waste, mixed TRU waste, non-RCRA hazardous waste, and hazardous waste.

A significant and measurable safety and health (S&H) vulnerability will be eliminated by this PBS. Specifically, legacy waste will be characterized, packaged, treated, if needed, and safely removed from the site for offsite disposition. The completion of this activity will address and alleviate stakeholder concerns regarding risks associated with long-term waste storage, and will reduce DOE's enduring and costly liabilities at LLNL, thereby, ensuring credibility with its stakeholders and regulators. Legacy waste, as used in this PBS, is defined as the backlog of stored waste remaining from nuclear weapons research activities for which a permanent disposal determination remains to be made or where insufficient characterization information exists to allow proper disposition.

Scope

Waste management operations involve the treatment, storage, processing, and certification for disposal of LLW, MLLW, CLLW, TRU waste, mixed TRU waste, and/or hazardous wastes at six active LLNL TSDFs. HWM manages four TSDFs at the Main Site and two TSDFs at Site 300. In addition, HWM has management responsibility for four Consolidation Waste Accumulation Areas (CWAAAs). The CWAA initiative allows for the collection of similar types of waste at designated areas to enable direct shipping operations from these locations to offsite TSDFs within 90 days, thereby, streamlining the waste handling process.

Main Site TSDFs, presently operating under interim status, are the Area 514 Facility, Area 612 Facility, Building 693, and the Building 233 Container Storage Unit (CSU). These facilities contain treatment and storage units for hazardous, mixed, and radioactive wastes. At Site 300, LLNL operates a permitted container storage area at Building 883 for the storage of hazardous wastes, and manages the Explosives Waste Treatment Facility (EWTF) that is used to treat non-nuclear high explosive wastes.

No solid waste disposal occurs onsite; waste is treated onsite and/or shipped to an offsite handling facility. The only exception is treated bulk waste that is discharged to the LLNL sanitary sewer. The LLNL wastewater discharge permit with the Livermore Water Reclamation Plant (LWRP), a publicly owned treatment facility, defines the limits of contaminants (hazardous and radioactive constituents) found in sewerable aqueous wastes, such

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as toxic metals, volatile halogenated solvents, radioactive components, total dissolved solids, pH and other conventional and non-conventional pollutants. The LWRP accepts effluents with contaminants at specified limits. Prior to any discharge, the sewerable wastewater must be tested and, if found to be less than acceptable discharge limits, the wastewater is released to the sanitary system. Otherwise, further treatment at the aqueous waste treatment facility must be conducted until the wastewater meets or falls below the discharge limits.

HWM performs the following core functions under the Base Program PBS work scope:

- Pick up, store, package, treat, and prepare waste for shipment to offsite TSDFs and recycling facilities.
- Track and document the movement of hazardous, mixed, and radioactive waste from Waste Accumulation Areas (WAAs) to final disposal offsite.
- Develop and communicate clear waste management guidelines to the generators.
- Respond to emergencies and participate in the cleanup of hazardous and radioactive spills at the Livermore Site and Site 300.
- Prepare regulatory-driven, DOE-required documents and associated HWM documents.

Technical Approach

HWM performs the essential service of collection, storage, treatment and disposition of hazardous, mixed and radioactive wastes generated by LLNL programs. HWM closes the loop between waste generation and disposal. While working towards pollution prevention and waste minimization, HWM's technical approach is to manage waste safely, legally and cost effectively. Recent focus on mortgage reduction has redirected a portion of HWM's resources to an accelerated characterization, certification and disposal of legacy waste. This accelerated disposal of legacy waste will reduce health, safety and environmental risks, and significantly reduce DOE's future mortgage.

HWM processes, packages, stores, treats, certifies, and prepares waste for shipment and disposal, recycling, or discharge to the sanitary sewer. These operations involve handling LLW, MLLW, CLLW, TRU waste, mixed TRU waste, and/or hazardous wastes at six active LLNL TSDFs. No solid waste disposal occurs onsite; waste is treated onsite and/or shipped to an offsite handling facility. The only exception is bulk aqueous waste that is released to the LLNL sanitary sewer after being treated to meet prescribed discharge limits.

Active waste management operations at LLNL include:

- (1) Treatment and storage of hazardous, radioactive, and mixed wastes at the Area 514 and 612 Facilities;
- (2) Container storage area for hazardous, radioactive, and mixed wastes at Building 693;
- (3) Container storage area for classified wastes and high curie TRU waste at Building 233 CSU;
- (4) Container storage area for hazardous waste at Site 300, Building 883; and
- (5) Treatment of non-nuclear high explosive wastes at Site 300, EWTF.

Each of the facilities above is described briefly below:

Area 514 Facility

This facility includes the Wastewater Treatment Tank Farm, the Wastewater Filtration Unit, the Building 513 Laboratory, Cold Vapor Evaporator (CVE), and solidification unit. It also operates as a container storage facility.

- Wastewater Treatment Tank Farm/Wastewater Filtration Unit: The principle treatment technique for aqueous MLLW is chemical precipitation

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followed by vacuum filtration through diatomaceous earth on a rotary drum filter. The contaminated filter cake is collected in drums for later treatment and disposal certification. The liquid waste remaining after treatment may then be released to the sewer if it is below prescribed discharge limits or treated again. Contaminated filter cake is stabilized in a drum using a mixer. The stabilized filter cake is checked, sampled, and certified for shipment and disposal offsite. Characteristic mixed waste filter cakes are stabilized so that they become LLW only. Listed mixed waste filter cakes are stabilized to meet Land Disposal Restriction (LDR) standards.

- Cold Vapor Evaporator: Used on aqueous CLLW and LLW to remove solids, such as precipitates, and suspended and dissolved solids from wastewaters by an evaporation process.
- Solidification Unit: Used to solidify wastes by means of various chemical reactions (e.g., hydration, cementation), thereby, minimizing the leaching of hazardous constituents from the waste matrix into the environment.

Area 612 Facility

This facility includes container storage areas, a Lab Packing/Packaging Container Storage Unit, and two treatment units (e.g., crushing unit, size reduction unit).

- Lab Packing/Packaging Unit: Used to repackage waste based upon Department of Transportation (DOT) compatibility for offsite disposition.
- Crushing Unit: Used to compact empty, nonreusable drums and containers not exceeding 55-gallons that contained hazardous, radioactive, or mixed wastes.
- Size Reduction Unit: Used to segregate, size reduce, and repackage waste to meet offsite waste acceptance criteria (WAC).

Building 693

This building operates as a container storage facility.

Building 233 Container Storage Unit

This CSU is used to store TRU waste with curie levels higher than allowed in Area 612 and classified wastes.

Building 883 Container Storage Area at Site 300

This is a covered storage area on the southwest side of Building 883. The facility is designed primarily to hold hazardous waste before it is transferred to Building 693 at the Main Site for treatment and storage, and/or offsite for disposal.

EWTF at Site 300

This facility is used to treat non-nuclear high explosive waste by open burn/open detonation.

Project Status in FY 2006:

The Base Program project will still be active and functioning to support LLNL waste generator operations in the accomplishment of their respective mission goals; however, several significant achievements will be ascertained to reduce human and environmental risks, operating costs, and waste generation rates. Specifically, it is anticipated that waste management operations in its present configuration and scope will be transferred to the landlord/generator, thereby, ensuring generator accountability for the waste management program. The intent is to provide an incentive for generators to reduce waste generation rates, resulting in lower treatment, storage, and disposal operating costs. Details of such a transfer have yet to be finalized, but is anticipated to be accomplished before FY 2006. Implementation of new treatment units (e.g., evaporator, centrifuge, carbon adsorption) to treat

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diverse waste streams will result in significant volume reduction. Obsolete TSDFs will be decontaminated with the activation of the DWTF. Significant S&H vulnerabilities and risks to the environment, worker, and public will be reduced by eliminating the existing legacy waste inventory, except TRU waste, before the end of FY 2006.

Post-2006 Project Scope:

HWM will continue to serve as the waste management organization responsible for the treatment, storage, certification, and disposal of radioactive, mixed, and hazardous wastes resulting from LLNL programs. Transition of waste management operations and equipment from obsolete TSDFs to the DWTF will be completed with the subsequent decontamination of these TSDFs realized. The DWTF will provide a new, centralized, and integrated approach for waste management operations. The DWTF will more safely fulfill HWM's requirements for storage, handling, treatment, and disposal of LLNL generated wastes.

Project End State

Assuming that LLNL continues to conduct research in nuclear weapons, stockpile stewardship, laser fusion, laser isotope separation, biomedical sciences, environmental sciences, and applied energy technology to meet national missions, the existence of a Base Program project will be necessary since radioactive, mixed, and hazardous wastes are a byproduct of this research. A centralized waste management program will be required to ensure waste is treated, stored, and removed from the site in a safe, compliant, and cost-effective manner and that LLNL waste generating programs are not impacted by its production. This Base Program PBS supports the overall end state of the site by providing a centralized and accountable waste management organization. This action will support LLNL waste generating programs to accomplish their research to address national needs, such as enhance economic competitiveness and science education. The activities described by this PBS will eliminate the existing legacy waste inventory, and ensure only certifiable waste will be accepted into the TSDFs through proactive interaction with the LLNL programs.

Cost Baseline Comments:

The Base Program PBS is a description of the work scope and associated cost for a discrete set of activities. The technical approaches for the subprojects comprising this PBS are defined in the Hazardous Waste Management Division FY 1999 Current Year Work Plan, dated October 1, 1998. This document identifies on a yearly basis the integrated technical work scopes, budgets, and time-phased schedules for waste management activities defined by the Base Program PBS commensurate with expected performance measures.

The plan serves as a quantitative expression of scope, schedule, and cost requirements against which the status of resources and the progress of the project can be measured. To account for changes to the Base Program PBS, a formal process of change control management has been established and implemented to accurately reflect the status of the project at any given time and achieve the principles of project accountability. The change control process relies on a systematic process for change description, evaluation, approval, and implementation through formalized documentation.

Beginning with FY 1999 - 2000, a major non-waste type specific effort will be devoted to transitioning waste operations from antiquated TSDFs to the DWTF. A successful transition is required to mitigate environmental and industrial risks associated with the displacement of existing equipment and operations to the new facility. To that end, significant resources will be expended in a variety of training, procedural and administrative efforts.

Space charges for TSDFs will escalate significantly in FY 2000 with the operation of the DWTF. This facility will result in an increase in net area

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managed by HWM of approximately 85,600 square feet, equating to an additional space charge of approximately \$1,000K per annum.

Safety & Health Hazards:

Significant S&H hazards associated with the functional categories of treatment, storage, and disposal of an ongoing waste management program are related to radiological and chemical exposure during waste handling activities. Exposure to radiological and chemical hazards poses the greatest impact to workers, the public, and the environment.

The waste management program at LLNL has enacted numerous cross-cutting S&H activities, consistent with Integrated Safety Management (ISM) guiding principles, by a dedicated staff of various ES&H disciplines to identify and analyze the hazards associated with the PBS work scope, as well as provide preventive measures to mitigate their impacts on human health and the environment. These S&H activities are necessary and integral to conducting programmatic functions safely. Key activities that have been and will continue to be implemented are as follows:

- Produce and maintain documents that are required by DOE and Price-Anderson Amendment Act including Safety Analysis Reports (SARs), Technical Safety Requirements (TSRs), Unreviewed Safety Questions (USQs), Preliminary Hazard Analysis, and Self-Help Plans.
- Complete safety evaluations, TSRs implementation, annual reviews of DOE Orders 5480.23 FSARs and 5480.22 TSRs.
- Complete compliance related issue resolution activities (e.g., secondary containment issues, storage stacking methodologies to meet regulatory requirements, container acceptance issues, guidance in implementing new programs).
- Review environmental regulations and documents to understand impact on waste management operations.
- Develop, review, revise and control Facility and Operational Safety Plans for conducting safe operations.
- Develop, review, revise and control Standard Operating Procedures that describe how work can be done safely.
- Assure the safe and compliant operation of waste management facilities through monthly environmental inspections.
- Oversee Conduct of Operations compliance at TSDFs.
- Provide guidance in correcting ES&H and regulatory deficiencies identified in self-assessments and audits.

SARs and TSRs have been developed for each waste management facility to define the bounding safety envelope, based on facility-specific work scope hazards, for activities performed within the facility. The basis of facility categorization can be found in the following documents:

- Hazardous Waste Management Facilities Final Safety Analysis Report, UCRL-CR-113523
- Final Safety Analysis Report for the Building 233 Container Storage Unit, UCRL-AR-123632
- Final Safety Analysis Report for the Building 883 Container Storage Unit, UCRL-AR-123881DR
- Final Safety Analysis report for the Explosives Waste Treatment Facility, UCRL-AR-127869DR

Each TSDF is designated with the low-hazard classification. This classification assumes administrative controls will prevent inventories from exceeding the maximum values used in their analysis. The FSARs demonstrate that waste management facilities can be operated without posing an undue risk to the health and safety of the operators and the public. The FSARs also demonstrate that the safety features of the facilities adequately mitigate the potential impact of operations on the environment.

Safety & Health Work Performance:

Controls

The LLNL Base Program has formally established and agreed-upon requirements that have been tailored to address the S&H hazards associated with

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treatment, storage, and disposal operations of an ongoing waste management program. Operations have been reviewed to ensure their governing procedures and related oversight and administrative activities are consistent with ISM core functions.

The LLNL Health and Safety Manual is the chief administrative safety document, serving as the basis for the laboratory's general safety policy. In the LLNL hierarchical safety program, the next level is the Facility Safety Plan (FSP). The FSP is the fundamental safety document for the facilities, wherein specific safety responsibilities are assigned, hazards are identified, and their risks are analyzed. Safety requirements and work controls are established for all activities and apply to all persons entering the facility. The FSP addresses general safety principles and emergency controls. It also provides controls for current operations, and specifies that further controls may be necessary for operations not specifically covered by the FSP.

Operations not specifically permitted in the FSP must be reviewed to determine whether an Operational Safety Plan (OSP) is required. The OSP delineates controls specific to the activity, including safety responsibilities and specific operational controls necessary to ensure a low-risk work environment. Further, the Hazards Control Department provides support personnel to assist in maintaining safe work areas by providing information on radioactive hazards and hazardous materials, recommending methods for controlling them, and monitoring the work environment. An ES&H team is assigned to support waste management areas. This team provides services and guidance for a variety of ES&H disciplines, including Health Physics, Industrial Hygiene, Fire Protection, Criticality Safety, and Industrial Safety.

Work Performance

The LLNL Base Program PBS provides for activities and checkpoints to ensure readiness prior to work, measures used to monitor adequacy of safety controls, and mechanisms that will be used to identify unforeseen S&H project hazards. The S&H activities and checkpoints coordinate, direct, integrate, and control work performance across multiple functional categories (e.g., treatment, storage, disposal). Key components used to ensure safe and compliant operations are described as follows:

- Facility Safety and Operational plans are developed and maintained as the primary facility safety documents to ensure that the risk to the worker and the public will not exceed the level deemed safe through analysis, guidance, and policy. Without these plans, work would be conducted without the necessary safeguards, leading to potentially serious radiological exposure, injury, and permanent disability.
- Safety Analysis Documents are developed and prepared to identify the bounding safety envelope for LLNL's waste management facilities. Lack of nuclear facility safety assessments violates worker safety rules and regulations and could result in incidents of worker exposure, injury, and potentially permanent disability. There would be no assessment, mitigation, and control of worker and public risk of exposure to radiological and hazardous materials from off-normal events and accidents without such documents.
- Standard Operating Procedures (SOPs) are prepared for all hazardous, critical, and quality-affecting operations. These procedures provide the most expert, step-by-step instructions in conducting an operation to assure the required endpoint is achieved and accomplished safely. Lack of SOPs, or use of superseded/recalled operating procedures, and the lack of distribution of immediate implementation orders will place workers at added safety and health risk on a daily basis and jeopardizes successful completion of the operation.
- Facilities and equipment maintenance are routinely executed to ensure a safe and compliant workplace. Without this activity, facilities would degrade and become unreliable, creating unsafe conditions and exposing workers to added risk of injury.
- Worker training courses are developed and given to workers to meet RCRA, OSHA, and Nuclear Facility Safety requirements. Without worker training and indoctrination, frequent and serious worker injury, including permanent disability and death, could result.
- Proper funding of treatment, storage and disposal activities promotes health and safety of personnel through maintaining the physical integrity of containers, proper storage of waste containers (e.g., monitoring criticality safety issues, ensuring only compatible waste types are stored together),

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correction of inspection and/or audit findings, and management of contents of various retention tanks. Without funding for these functions, there would be an increase in the risk to personnel and the environment due to breaches in containers and resulting chemical exposures.

- Emergency preparations must be maintained (e.g., ensure waste containers are available, spill kits are maintained, accidental spills are remediated and managed in a timely and efficient manner). The environment will be placed at a greater risk if emergency equipment was not readily available during a spill.
- Chemistry review ensures that waste accepted at the TSDFs is properly characterized and labeled to protect the health and safety of personnel and the environment. In addition, chemists implement the Single Container Inventory Limit (SCIL) program, an important TSR.
- Accurate entry and retrieval of waste information are crucial to being able to respond appropriately to spills and emergencies. Without this function, it will make identification of waste difficult in accident/spill scenarios.

Feedback and Continuous Improvement

The LLNL Base Program PBS provides for activities and mechanisms necessary to collect feedback information, identify and implement opportunities for improvement, and ensure oversight of waste management operations at the TSDFs. These activities and mechanisms are implemented in a formally established quality assurance program that is responsible for enacting self-assessment and lessons learned work scope and monitoring timely resolution of corrective actions via a computerized deficiency tracking system. Major components of the quality assurance program to enhance feedback and continuous improvements are as follows:

- S&H documentation and control
- S&H performance trending, analysis, and lessons learned feedback
- Corrective action tracking
- S&H self-assessments
- Internal audits and surveillances

PBS Comments:

It is expected that HWM will continue to expand and implement its expertise in the areas of waste certification, management of "classified waste," explosive waste management and the stabilization and solidification of problematic mixed and radioactive wastes. This waste management approach coincides with HWM's aggressive implementation of the Site Treatment Plan with cost effective and safe permanent waste disposal as the objective.

Beginning with FY 1999, a major non-waste type specific effort will be devoted to transitioning waste operations from antiquated TSDFs to the DWTF. A successful transition is required to mitigate environmental and industrial risks associated with the displacement of existing equipment and operations to the new facility. To that end, significant resources will be expended in a variety of training, procedural and administrative efforts.

Baseline Validation Narrative:

In May 1995, an Independent Technical Review (IRT) was tasked by DOE/OAK to evaluate the LLNL waste management program based on commercial business practices and metrics and recommend improvements where substantive differences exist between commercial practice, processes, or performance. A report documenting the review was published in August 1995. The report recommended that the LLNL waste management program be fundamentally reengineered with the objective of concurrently reducing waste volumes and total program costs while improving generator service. Chartered with this recommendation as an action item, LLNL/HWM hired a consulting firm to reconcile the IRT's recommendations into a strategic, time-phased plan for implementation. In February 1996, a report was published documenting how HWM would streamline waste

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management operations, the organizational structure, and its business processes. The reengineering recommendations and optimization processes identified in the February 1996 report have been included in core project function activities.

In FY 1998 and continuing through FY 1999, a DOE/OAK cost estimating team will be formed to determine if the project baseline is defensible relative to technical scope, costs, and management systems in supporting the budget formulation process. The validation will include a detailed examination of the scope of work and all assumptions used as a basis for estimating costs. The team will also perform an exhaustive review of the project to ensure reengineering recommendations and optimization processes identified by external validation teams have been incorporated into core project function activities.

General PBS Information

Project Validated?	Yes	Date Validated:	5/1/1995					
Has Headquarters reviewed and approved project?	No							
Date Project was Added:	12/1/1997							
Baseline Submission Date:	7/13/1999							
FEDPLAN Project?	No							
Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	Y	N	Y	N	Y	Y	N

Project Identification Information

DOE Project Manager:	Roy Kearns
DOE Project Manager Phone Number:	925-422-1168
DOE Project Manager Fax Number:	925-422-0832
DOE Project Manager e-mail address:	roy.kearns@oak.doe.gov
Is this a High Visibility Project (Y/N):	

Planning Section

Baseline Costs (in thousands of dollars)

1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
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Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	228,062	1,382,427	1,610,489	19,985	20,998	19,132	18,479	21,054	23,591	23,800	24,700	24,700	23,700	23,700	23,700	
PBS Baseline (constant 1999 dollars)	213,915	650,847	864,762	19,985	20,998	19,132	18,479	21,054	22,971	22,698	23,071	22,597	21,236	20,799	20,372	
PBS EM Baseline (current year dollars)	156,962	0	156,962	19,985	20,998	19,132	18,479	21,054	23,591	23,800	24,700	24,700	0	0	0	
PBS EM Baseline (constant 1999 dollars)	151,508	0	151,508	19,985	20,998	19,132	18,479	21,054	22,971	22,698	23,071	22,597	0	0	0	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	23,700	21,252	21,156	21,579	107,895	107,895	107,895	107,895	107,895	107,895	107,895	107,895	107,895	107,895	107,895	107,895
PBS Baseline (constant 1999 dollars)	19,953	17,524	17,086	17,069	80,220	72,303	65,167	58,735	52,937	47,713	43,004	38,759	34,935	31,487	28,378	25,577
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Non-EM Costs included in the Cost Baseline

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Non-EM Category: Newly Generated													
Defense Programs								100	100	100	100	100	100

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	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
Non-EM Category:	Newly Generated												
Defense Programs	100	100	100	100	100	100	100	100	100	100	100	100	100
Baseline Escalation Rates													
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project:

Current Projected End Date of Project: 9/30/2003

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	64,521	Actual 1997 Cost:	20,998	Actual 1998 Cost:	18,479
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	25,044	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			676
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	25,720				

Project Cost Changes

Cost Adjustments Reconciliation Narratives

Cost Change Due to Scope Deletions (-):

Cost Reductions Due to Efficiencies (-):

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Cost Associated with New Scope (+):	18,000	Operations of new facilities such as the LCPU, DWTF, and EWTF.
Cost Growth Associated with Scope Previously Reported (+):	4,000	Delays in opening WIPP transport corridor and higher space charges.
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	47,720	
Additional Amount to Reconcile (+):	64,671	Lifecycle cost incorrectly assumes operations are transferred in FY 2000.

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	112,391
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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Aqueous LLW Treatment at B514	99-009		9/29/1999								
Aqueous MLLW Treatment at B514	99-008		9/29/1999								
B696 Facility Safety Plan	99-016		9/29/1999								
Building 280 FSAR	99-002		9/29/1999								
Chemical Exchange Warehouse (CHEW) Transition	99-015		9/29/1999								
Debris Treatment Unit Study	99-007		9/29/1999								
Field Verification	99-001		9/29/1999								
LLW Combined Waste Profiles	99-006		9/29/1999								
LLW Disposal	99-010		9/29/1999								Y
Legacy Waste NDE	99-012		9/29/1999								
Legacy Waste Treatment/Disposal	99-017		9/29/1999								Y
MLLW Disposal	99-011		9/29/1999								Y
MLLW Profiles	99-005		9/29/1999								
Size Reduction Unit	99-013		9/29/1999								
TRU NDA Validation	99-014		9/29/1999								

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Treatment System Integration	99-004		9/29/1999								
Uranium Bleaching Study	99-003		9/29/1999								
Explosives Waste Treatment Facility Operations	99-018		9/29/1999						Y		
Project Start			10/1/1996								
Project End Date			9/30/2003								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Aqueous LLW Treatment at B514	99-009										Using various aqueous treatment units/technologies, treat approximately 12,000 gallons of LLW at B514.
Aqueous MLLW Treatment at B514	99-008										Using various aqueous treatment units/technologies, treat approximately 20,000 gallons of MLLW at B514.
B696 Facility Safety Plan	99-016										Develop FSP wherein safety responsibilities are assigned, hazards are identified, and their risks analyzed.
Building 280 FSAR	99-002										Complete the FSAR for B280 and submit to DOE for approval.
Chemical Exchange Warehouse (CHEW) Transition	99-015										Complete transition of material and operations from B693 to B697.
Debris Treatment Unit Study	99-007										Finalize treatability study of debris treatment unit and initiate design for DWTF.

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Field Verification	99-001										Develop field tests and set up an operational laboratory for wastestream verification.
LLW Combined Waste Profiles	99-006										Establish Envirocare profile for newly generated combined waste.
LLW Disposal	99-010										Dispose of approximately 573 cubic meters of LLW.
Legacy Waste NDE	99-012										Complete commercial NDE of approximately 550 containers of legacy waste using real time radiography (RTR).
Legacy Waste Treatment/Disposal	99-017										Treat and dispose of approximately 135 cubic meters of legacy waste.
MLLW Disposal	99-011										Dispose of approximately 149 cubic meters of MLLW.
MLLW Profiles	99-005										Establish Envirocare profile for newly generated MLLW trash.
Size Reduction Unit	99-013										Complete readiness review for Size Reduction Unit (SRU) and initiate operations.
TRU NDA Validation	99-014										Complete data validation of commercial NDA packages for approximately 600 TRU waste drums.
Treatment System Integration	99-004										Complete mechanical and electrical integration of centrifuge, carbon adsorption, blending stations, and evaporator units to enhance treatment capabilities.
Uranium Bleaching Study	99-003										Finalize treatability study of uranium bleaching unit and initiate design for

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Explosives Waste Treatment Facility Operations	99-018										DWTF. Initiate EWTF operations to treat non-nuclear high explosive waste.
Project Start				Y							
Project End Date					Y	Y					Project and Mission completion Date.

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
TRU														
Treatment	M3	53.00	0.00	53.00								53.00		
TRU														
Storage	M3							299.00	309.00	329.00	349.00	316.00	336.00	0.00
TRU														
Ship. to WIPP	M3	0.00	0.00	0.00										
MLLW														
Treatment	M3	430.00	0.00	430.00	0.00		0.00	55.00	87.00	84.00	67.00	66.00	71.00	
MLLW														
Storage	M3							433.00	430.00	405.00	384.00	364.00	313.00	
MLLW														
On-Site Disp.	M3	0.00	0.00	0.00	0.00		0.00							
MLLW														
Comm. Disp.	M3	150.00	0.00	150.00	0.00		0.00		12.00	37.00	25.00	25.00	51.00	

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Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
LLW														
Treatment	M3	2,651.00	0.00	2,651.00	0.00		0.00	693.00	227.00	435.00	433.00	433.00	430.00	
LLW														
Storage	M3							1,237.00	1,229.00	1,003.00	779.00	555.00	339.00	
LLW														
Comm. Disp.	M3	282.00	0.00	282.00				190.00		25.00	25.00	25.00	17.00	
LLW														
Ship to DOE Disp.	M3	3,455.00	0.00	3,455.00	0.00		0.00	814.00	1,086.00	388.00	388.00	387.00	392.00	
Haz.														
DOE On-Site	MT	0.00	0.00	0.00	0.00		0.00							
Tech.														
Deployed	Ntd	1.00	0.00	1.00					1.00					
Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035	
TRU														
Treatment	M3													
TRU														
Storage	M3	0.00	0.00		0.00	0.00								
TRU														
Ship. to WIPP	M3													
MLLW														
Treatment	M3													

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Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
MLLW													
Storage	M3												
MLLW													
On-Site Disp.	M3												
MLLW													
Comm. Disp.	M3												
LLW													
Treatment	M3												
LLW													
Storage	M3												
LLW													
Comm. Disp.	M3												
LLW													
Ship to DOE Disp.	M3												
Haz.													
DOE On-Site	MT												
Tech.													
Deployed	Ntd												
Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total			
TRU													
Treatment	M3									53.00			
TRU													
Storage	M3												

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
TRU										
Ship. to WIPP	M3								0.00	0.00
MLLW										
Treatment	M3								0.00	917.00
MLLW										
Storage	M3									
MLLW										
On-Site Disp.	M3									209.00
MLLW										
Comm. Disp.	M3									459.00
LLW										
Treatment	M3								0.00	1,964.00
LLW										
Storage	M3									
LLW										
Comm. Disp.	M3								0.00	92.00
LLW										
Ship to DOE Disp.	M3								0.00	3,024.00
Haz.										
DOE On-Site	MT									7,755.00
Tech.										
Deployed	Ntd								1.00	1.00
Technology Needs										

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Technology Needs

Site Need Code: OK99-06

Site Need Name: Mobile Non-Destructive Assay for TRU Waste Boxes

Focus Area Work Package ID: MW-01

Focus Area Work Package: Nondestructive Characterization for Treatment, Transportation, and Disposal of MLL and MTRU Waste.

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

NDA of Boxes Containing TRU Waste

Cost Savings (in thousands of dollars)

0

Range of Estimate

Unknown

Characterization - Crate Surrogates

0

Unknown

Related CCP Milestones

Related Waste Streams

01834: -

Agree?

Y

Change?

N

Site Need Code: OK99-09

Site Need Name: Destruction of Mixed Chlorinated Solvents

Focus Area Work Package ID: MW-07

Focus Area Work Package: Alternatives to Incineration to Reduce Emission Hazards.

Focus Area: MWFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

Direct Chemical Oxidation

Cost Savings (in thousands of dollars)

1,000

Range of Estimate

High

Related CCP Milestones

Related Waste Streams

01826: -

Agree?

Y

Change?

N

Technology Deployments

Deployment Year

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<u>Deployment Status</u>	<u>Planned</u>	<u>Forecast</u>	<u>Actual Date</u>
Technology Name: Direct Chemical Oxidation			
Deployment Commitment	1999		